

STUDY ON A NEW GENUS *SICIUNGUIS* AND DESCRIPTION OF THREE NEW SPECIES FROM CHINA

(HOMOPTERA: APHIDOIDEA: PEMPHIGIDAE: ERIOSOMATINAE) *

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Abstract The present paper deals with *Siciunguis* Zhang *et* Qiao, gen. nov. from China, and describes 3 new species, viz: *Siciunguis decima* Zhang *et* Qiao, sp. nov., *S. novena* Zhang *et* Hu, sp. nov. and *Aphidounguis pomiradicola* Zhang *et* Hu, sp. nov. All type specimens are deposited in the Institute of Zoology, Chinese Academy of Sciences.

Key words Pemphigidae, *Siciunguis*, new species, China

***Siciunguis* Zhang *et* Qiao, gen. nov.**

Type-species: *Siciunguis decima* Zhang *et* Qiao, sp. nov.

Antennae 6-segmented, primray rhinaria small, round, ciliated; secondary rhinaria linear shaped. Four longitudinal rows of wax gland plates on dorsum of body, each with one or more central facets surrounded by a ring of facets. Media of fore wing one-forked. Hind wing with 2 oblique veins. First tarsal segments chaetotaxy: 3, 3, 3. Tarsi 2-segmented, siphunculi located on abdominal tergite V (apterous viviparous females) or VI (alate viviparous females), protuberant surrounded by a few fine, sharp-pointed hairs. Cauda and anal plate circular at apex. Two gonapophyses.

The new genus consists of two species, the type-species: *Siciunguis decima* Zhang *et* Qiao, sp. nov. feeds on branches of *Malus pumila* Mill, secretes many white wax powders, and damages heavily fruit trees; *Siciunguis novena* Zhang *et* Hu, sp. nov. feeds on *Pyrus bretschneideri* Rehd. Primary host plants unknown.

The new genus is related to *Aphidounguis* Takahashi, 1963 and *Eriosoma* Leach, 1818, and lies in between them, but differs from them in: siphunculi of alate viviparous females located on abdominal tergite VI, protuberant surrounded by hairs (*Aphidounguis*: VI, non-protuberant, not surrounded by hairs; *Eriosoma*: V, protuberant surrounded by hairs); antennae slightly longer, at least 0.35 time as long as body, with linear shaped secondary rhinaria (*Aphidounguis*: shorter, at most 0.31 time as long as body with linear shaped secondary rhinaria; *Eriosoma*:

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slightly longer, at least 0.40 time as long as body, with ring like secondary rhinaria).

Key to species of *Siciunguis* Zhang et Qiao, gen. nov. (alate viviparous females)

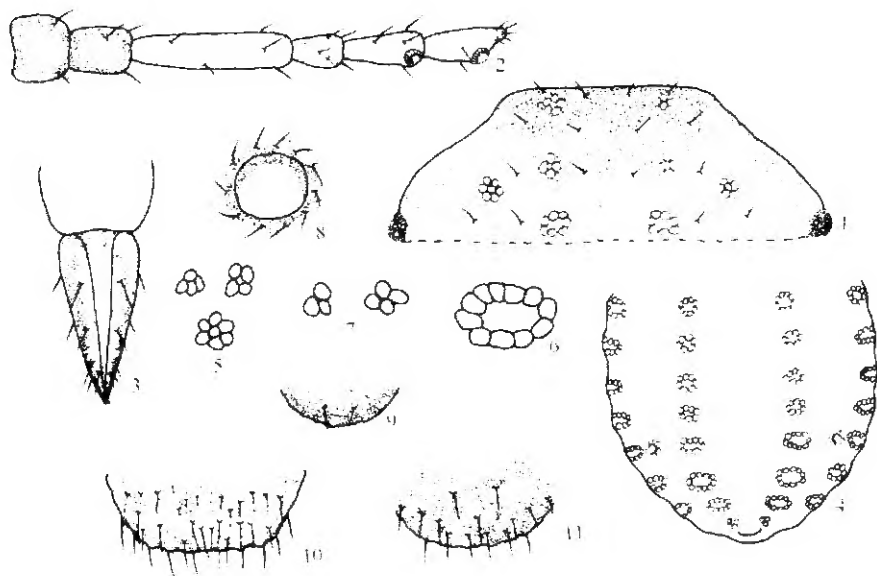
1. Antennal segment III with 16 or 17 secondary rhinaria; processus terminalis 0.31 time as long as the base of segment, length in proportion of antennal segments I ~ VI: 16, 16, 100, 37, 32, 21+7; abdominal tergite VIII with 2 hairs; cauda with 2 hairs *S. decima* Zhang et Qiao, sp. nov.

Antennal segment III with 12 or 13 secondary rhinaria; processus terminalis 0.45 time as long as the base of segment; length in proportion of antennal segments I ~ VI: 22, 22, 100, 39, 39, 18+8; abdominal tergite VIII with 7 hairs; cauda with 4 or 5 hairs *S. novena* Zhang et Hu, sp. nov.

***Siciunguis decima* Zhang et Qiao, sp. nov. (Figs. 1~17)**

Apterous viviparous females: Body large, elliptical; brown in life, with long wadding white wax powder on posterior tergites. Dorsum of body with wax plates, head with 3 pairs of spinal wax plates, 1 pair of marginal wax plates, each contains 3~7 small round wax cells, pro-, meta- and mesonotum each with 1 pair of spinal and 1 pair of marginal wax plates, abdominal tergites I ~ VII each with 1 pair of spinal and 1 pair of marginal wax plates; tergite VIII with 1 pair of spino-pleural wax plates, small, each contains 2~5 wax cells. Dorsal hairs fine and sharp-pointed, 2 pairs of cephalic hairs, dorsum of head with 12~14 hairs, pronotum with 9~12 hairs, abdominal tergite I with 9 or 10 hairs, tergite VIII with 4~6 hairs. Length of cephalic hairs, marginal hairs on tergite I, dorsal hairs on tergite VIII each 1.14 times, 0.86 time, 1.00 time as long as the widest diameter of antennal segment III, respectively. Eye 3-facets. Antennae 6-segmented, shorter, 0.26 time as long as body. Length in proportion of segments I ~ VI: 40, 40, 100, 33, 52, 40+15, processus terminalis 0.38 time as long as the base of segment. Hairs on antennal segments I ~ VI: 2~4, 3 or 4, 5~9, 4 or 5, 4 or 5, 1 or 2+5. Length of hairs on segment III 0.50 time as long as the widest diameter of segment. Primary rhinaria small, round, ciliated. Rostrum thick, reaching 1st abdominal segment, ultimate rostral segment 1.31 times as long as 2nd hind tarsal segment, 2.46 times as long as basal diameter of segment, with 7 pairs of hairs, 4 pairs of accessory hairs among them. Hind femur 2.13 times as long as antennal segment III, hind tibiae 0.26 time as long as body. Length of hairs on hind tibiae as long as the mid-diameter of segment. First tarsal segments chaetotaxy: 3, 3, 3. Siphunculi located on abdominal tergite V, with "C" shaped sclerotic ring, apical diameter 2.00 times as long as the widest diameter of antennal segment III, surrounded by 11 fine and sharp-pointed hairs. Cauda small, circular at apex, with 2 hairs; anal plate broadly circular at apex, with 34 or 35 hairs; genital plate with 13~15 hairs, 2 anterior hairs.

Alate viviparous females: Body elliptical. Abdominal tergites I ~ VIII each with 1 pair of dark-brown marginal plates, a transversely spinal band, which on tergites I ~ IV slightly wider, on tergites V ~ VIII narrow. Head with 15~18 dorsal hairs, abdominal tergite I with 6 or 7 hairs, ter-



Figs. 1~11 *Siciunguis decima* Zhang et Qiao, sp. nov.

Apterous viviparous females 1. dorsal view of head; 2. antenna; 3. ultimate rostral segment; 4. wax plates on abdomen;

5. wax plate on dorsum of head; 6. marginal wax plate on tergite I; 7. wax plate on tergite VIII;

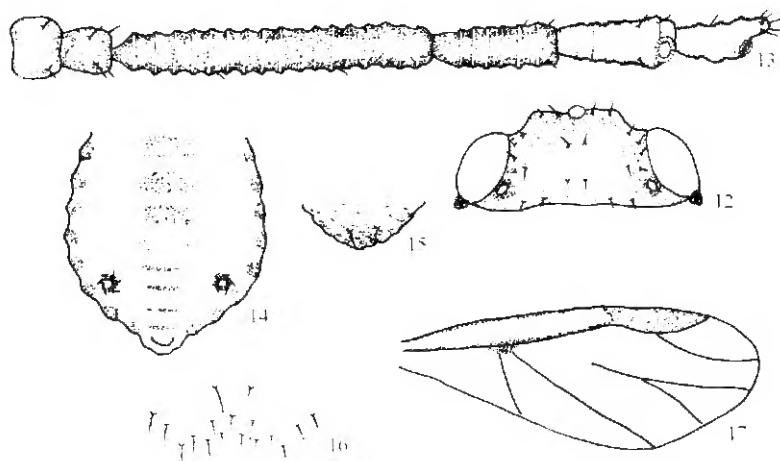
8. siphunculus; 9. cauda; 10. anal plate; 11. genital plate

图1~11 十绵蚜 *Siciunguis decima* Zhang et Qiao 新种

无翅孤雌蚜 1. 头部背面观; 2. 触角; 3. 喙末端; 4. 腹部蜡片; 5. 头背蜡片; 6. 腹部背片I缘蜡片;

7. 背片VIII蜡片; 8. 腹管; 9. 尾片; 10. 尾板; 11. 生殖板

gite VIII with 2 hairs. Length of cephalic hairs, marginal hairs on tergite I, dorsal hairs on tergite VIII 0.56 time, 0.63 time, 0.81 time as long as the widest diameter of antennal segment III, respectively. Antennae 0.41 time as long as body. Length in proportion of segments I ~ VI: 16, 16, 100, 37, 32, 21+7, processus terminalis 0.31 time as long as the base of segment. Hairs on antennal segments I ~ VI: 2, 4, 6 or 7, 3, 2 or 3, 2+5 or 6. Length of hairs on segment III 0.31 time as long as the widest diameter of segment III. Secondary rhinaria linear shaped, segments III ~ VI each with 16 or 17, 5 or 6, 5, 1~3, respectively. Ultimate rostral segment 1.07 times as long as 2nd hind tarsal segment, 3.05 times as long as basal diameter of segment; with 7~8 pairs of hairs, 4~5 pairs of accessory hairs among them. Hind femur 1.43 times as long as antennal segment III, hind tibia 0.41 time as long as body. Hairs on hind tibiae 0.59 time as long as mid-diameter of segment. First tarsal segments chaetotaxy: 3, 3, 3. Fore wing 1.32 times as long as body, media one-forked. Hind wing with 2 oblique veins. Siphunculi located on abdominal tergite VI, apical diameter 1.38 times as long as the widest diameter of antennal segment III, surrounded by 8~11 fine and sharp-pointed hairs. Anal plate with 31 or 32 hairs, genital plate with



Figs. 12~17 *Siciunguis decima* Zhang et Qiao, sp. nov.

Alate viviparous females 12. dorsal view of head; 13. antenna; 14. dorsal view of abdomen;
15. cauda; 16. genital plate; 17. fore wing

图 12~17 十绵蚜 *Siciunguis decima* Zhang et Qiao 新种

有翅孤雌蚜 12. 头部背面观; 13. 触角; 14. 腹部背面观; 15. 尾片; 16. 生殖板; 17. 前翅

12~17 hairs, 2 anterior hairs. Other data same as apterous viviparous females.

Measurements (in mm): Apterous viviparous females: Body 1.906 in length, 1.088 in width. Antennae 0.494, segments I ~ VI: 0.062, 0.062, 0.155, 0.051, 0.081, 0.062 + 0.023; ultimate rostral segment 0.164; hind femur 0.330, hind tibia 0.494, 2nd hind tarsal segment 0.126.

Alate viviparous females: Body 1.963 in length, 0.988 in width; antennae 0.811, segments I ~ VI: 0.057, 0.057, 0.355, 0.131, 0.114, 0.075 + 0.025; ultimate rostral segment 0.165; hind femur 0.510, hind tibia 0.809, 2nd hind tarsal segment 0.155; fore wing 2.600 in length.

The new species is related to *Siciunguis novena* Zhang et Hu, sp. nov., but differs from the latter in that: antennal segment III with 16 or 17 secondary rhinaria (the latter: 12 or 13); processus terminalis 0.31 time as long as basal part of segment (the latter: 0.45 time); length in proportion of antennal segments I ~ VI: 16, 16, 100, 37, 32, 21 + 7 (the latter: 22, 22, 100, 39, 39, 18 + 8); abdominal tergite VIII with 7 hairs (the latter: 2 hairs); cauda with 2 hairs (the latter: 4 or 5).

Holotype: Apterous viviparous females, No. Y8029-1-1-4, Oct. 3, 1996, Hebei Province (Shijiazhuang, 38.00 E, 114.40 N, 82 m), on branches and stings of *Malus pumila* Mill.; by Gao Zhiwei; paratypes: 14 apterous viviparous females, 12 alate viviparous females, No. Y8029, other data same as holotype; No. Y7983, Oct. 10, 1995, Hebei Province (Zhengding County,

38.10 E, 114.50 N, 80 m), by Li Zhihui and Gu Zhaoyi, host plants same as holotype.

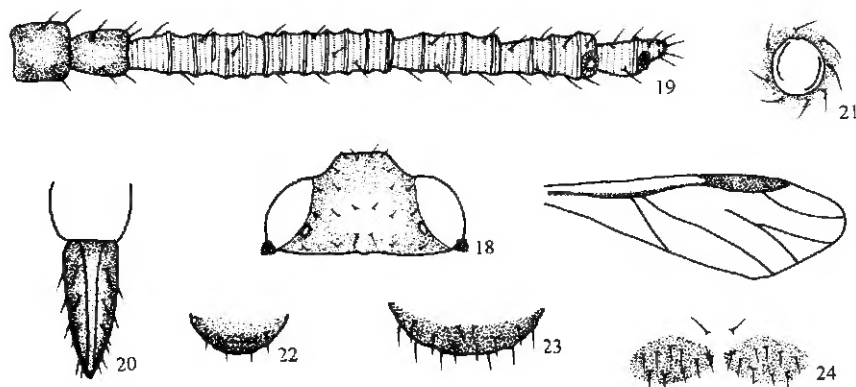
***Siciunguis novena* Zhang et Hu, sp. nov.** (Figs. 18~24)

Alate viviparous females: Body elliptical. Dorsal hairs fine sharp-pointed, shorter, 2 pairs of cephalic hairs, dorsal head with 1 pair of spinal hairs, 3 or 4 pleural hairs and 2~6 marginal hairs, 2 pairs of dorsal hairs between eyes; abdominal tergite I with 6 or 7 hairs, tergite VIII with 7 hairs. Length of cephalic hairs, marginal hairs on abdominal tergite I, dorsal hairs on tergite VIII 1.29, 0.94, 1.06 times as long as the widest diameter of antennal segment III, respectively. Antennae 6-segmented, segments I~II wrinkle, segment III glabrous, IV~VI spinulose imbricate 0.38 time as long as body. Length in proportion of segments I~VI: 22, 22, 100, 39, 39, 18+8, process terminalis 0.45 time as long as base of segment. Hairs on antennae similar to dorsal hairs, segments I~VI each 3 or 4, 5 or 6, 10~17, 5 or 6, 8~13, 3+5, respectively. Hairs on segment III 0.82 time as long as the widest diameter of segment. Primary rhinaria irregular, long ciliated, secondary rhinaria ring-like, segments III~VI each with 12 or 13, 3 or 4, 3 or 4, 1, respectively. Rostrum reaching metanotum, ultimate rostral segment 2.80 times as long as basal diameter of segment, 1.27 times as long as 2nd hind tarsal segment, with 5~8 pairs of hairs, 2~5 accessory hairs among them. Legs normal, hind femur 1.54 times as long as antennal segment III; hind tibia 0.37 time as long as body. Length of hairs on hind tibia 0.92 time as long as mid-diameter of segment. First tarsal segments chaetotaxy: 3, 3, 3. Fore wing narrowly long, 3.18 times as long as the widest diameter of fore wing, 1.32 times as long as body; pterostigma narrow, media one-forked. Hind wings 2 oblique veins. Siphunculi ring-like, apical diameter 1.18 times as long as the widest diameter of antennal segment III, with 8 fine, short hairs around. Cauda broadly round at apex, with 4 or 5 hairs. Anal plate broadly round at apex, with 12~14 hairs. Genital plate with 15~17 hairs, 2 anterior hairs. Two gonapophyses, united each other, each with 6 hairs.

Measurements (in mm): Body 1.838 in length, 0.856 in width. Antennae 0.695, segments I~VI: 0.062, 0.062, 0.281, 0.110, 0.110, 0.051+0.022. Ultimate rostral segment 0.144. Hind femur 0.433, hind tibia 0.680, 2nd hind tarsal segment 0.113. Fore wing 2.425 in length.

The new species is related to *Siciunguis decima* Zhang et Qiao, sp. nov., but differs from the latter in: antennal segment III with 12 or 13 secondary rhinaria (the latter: 16 or 17); process terminalis 0.45 time as long as basal part of segment (the latter: 0.31 time); length in proportion of antennal segments I~VI: 22, 22, 100, 39, 39, 18+8 (the latter: 16, 16, 100, 37, 32, 21+7); abdominal tergite VIII with 2 hairs (the latter: 7 hairs); cauda with 4 or 5 hairs (the latter: 2).

Holotype: Alate viviparous female, No. Y7986-1-2-1, Oct. 11, 1995, Shaanxi Province (Qian County, 34.50 E, 108.20 N, 670 m), on *Pyrus bretschneideri* Rehd., by Hu Zuodong; paratypes: 5 alate viviparous females, No. Y7986, by Hu Zuodong, Ma Shuyan, Zhang Fuhe and Wang Jianyou, other data same as holotype.



Figs. 18~24 *Siciunguis novena* Zhang et Hu, sp. nov.

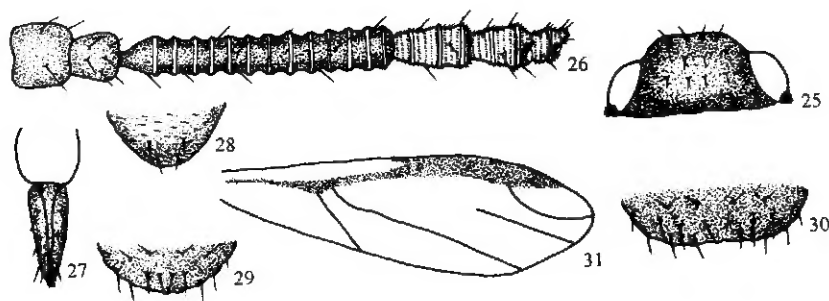
Alate viviparous females 18. dorsal view of head; 19. antenna; 20. ultimate rostral segment; 21. siphunculus;
22. cauda; 23. anal plate; 24. genital plate

图 18~24 九绵蚜 *Siciunguis novena* Zhang et Hu 新种

有翅孤雌蚜 18. 头部背面观; 19. 触角; 20. 喙末端; 21. 腹管; 22. 尾片; 23. 尾板; 24. 生殖板

Aphidounguis pomiradicola Zhang et Hu, sp. nov. (Figs. 25~31)

Alate viviparous females: Body long-elliptical. Antennal segment III glabrous, IV~VI spinulose imbricate, tarsi spinulose imbricate; cauda and anal plate short wrinkle, genital plate spinulose imbricate. Dorsal hairs of body fine, short, sharp-pointed. 2 pairs of cephalic hairs, dorsum of head with 2 pairs of spinal hairs, 2~3 pairs of pleural hairs and 1~2 pairs marginal hairs; pronotum with 6 hairs; abdominal tergite I with 4 hairs, VIII with 7~11 hairs. Length of cephalic hairs, marginal hairs on tergite I, dorsal hairs on tergite VIII 0.79, 0.64, 0.86 time as long as the widest diameter of antennal segment III, respectively. Antennae 6-segmented, 0.31 time as long as body, length in proportion of segments I~VI: 25, 19, 100, 31, 25, 10+4, processus terminalis 0.40 time as long as base of segment. Primary rhinaria small round, long ciliated. Secondary rhinaria linear shaped, segments III~VI each with 12~15, 2 or 3, 2, 1, respectively. Hairs on antennae fine, short, sharp-pointed, I~VI each with 3 or 4, 6 or 7, 7~11, 4, 4, 2+3, respectively. Length of hairs on segment III 0.57 time as long as the widest diameter of segment. Rostrum reaching metanotum, ultimate rostral segment 3.08 times as long as basal diameter of segment, 1.11 times as long as 2nd hind tarsal segment with 3~4 pairs of hairs, 1~2 pairs of accessory hairs among them. Legs normal. Hind femur 1.19 times as long as antennal segment III, hind tibia 0.32 time as long as body. Hairs on legs thick, short, sharp-pointed, length of hairs on hind tibia 0.75 time as long as mid-diameter of segment. First tarsal segments chaetotaxy: 3, 3, 3. Siphunculi unseen. Fore wing 1.16 times as long as body, 2.96 times as long as the widest diameter of fore wing. Media non-forked, hind wing with 2 oblique veins. Cauda small, circular at apex,



Figs. 25~31 *Aphidounguis pomiradicola* Zhang et Hu, sp. nov.

Alate viviparous females 25. dorsal view of head; 26. antenna; 27. ultimate rostral segment; 28. cauda;
29. anal plate; 30. genital plate; 31. fore wing

图 25~31 苹果根爪绵蚜 *Aphidounguis pomiradicola* Zhang et Hu 新种

有翅孤雌蚜 25. 头部背面观; 26. 触角; 27. 喙末端; 28. 尾片; 29. 尾板; 30. 生殖板; 31. 前翅

with 4 hairs; anal plate broadly circular at apex, with 4 hairs. Genital plate transversely elliptical, with 10~14 hairs, 2~4 anterior hairs, two gonapophyses, each with 3 or 4 short, sharp-pointed hairs.

Measurements (in mm): Body 1.725 in length, 0.600 in width. Antennae 0.530, segments I~VI: 0.062, 0.047, 0.247, 0.077, 0.062, 0.025 + 0.010. Ultimate rostral segment 0.103. Hind femur 0.294, hind tibia 0.556, 2nd hind tarsal segment 0.093. Fore wing 2.000 in length.

The new species is related to *Aphidounguis mali* Takahashi, 1963, but differ from it in: siphunculi unseen (the latter: siphunculi located on tergite VI), cauda with 4 hairs (the latter: 2 hairs); genital plate with 10~14 hairs (the latter: 19 hairs); length in proportion of antennal segments III~VI: 100, 31, 25, 10 + 4 (the latter: 100, 34, 32, 26 + 11).

Holotype: Alate viviparous female, No. Y7985-1-2-3, Oct. 16, 1995, Shaanxi Province (Qian County, 34.50 E, 108.20 N, 670 m), on roots of *Malus pumila* Mill., by Hu Zuodong; paratypes: 7 alate viviparous females, No. Y 7985, Hu Zuodong, Ma Shuyan, Zhang Fuhe and Wang Jianyou, other data same as holotype.

References (参考文献)

- 1 Akimoto S I. Taxonomic study on gall aphids, *Colopha*, *Paracolopha* and *Kaltenbachietta* (Aphidoidea: Pemphigidae) in East Asia, with special reference to their origin and distributional patterns. Ins. Mat. 1985, 31: 1~79
- 2 Bodeneimer F S, Swirski E. The aphidoidea of the Middle East. The Weizmann Science Press of Israel, Jerusalem, 1957, 378
- 3 Eastop V F, Hille Ris Lambers D. Survey of the world's aphids. W. Junk, The Hague, 1976, 573
- 4 Ghosh A K. Fauna of India. Homoptera, Aphidoidea, subfamily Pemphiginae. Zool. Survey of India, Calcutta, 1984; 62~153
- 5 Heie O E. The Aphidoidea (Hemiptera) of Fennoscandia and Denmark. I., 1980: 133~139
- 6 Hille Ris Lambers D. A study of *Tetraneura* Hartig, 1841 with description of a new subgenus and new species. Boll. Lab. Zoo. Agr. Bachice, 1970, (9): 2~101
- 7 Tao G C. Aphid fauna of China. Science Yearbook of Taiwan Museum I, 1970: 7~12

拟爪绵蚜新属及三新种记述

(同翅目: 蚜总科: 瘿绵蚜科)

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该文记述了瘿绵蚜科一新属拟爪绵蚜属 *Siciunguis* Zhang et Qiao gen. nov. 和这个属的二个新种, 即十绵蚜 *S. decima* Zhang et Qiao, sp. nov., 九绵蚜 *S. novena* Zhang et Hu, sp. nov., 另外还记述了爪绵蚜属 *Aphidounguis* Takahashi, 1963 一个新种, 苹果根爪绵蚜 *A. pomiradicola* Zhang et Hu, sp. nov., 模式标本存放在中国科学院动物研究所。

拟爪绵蚜新属 *Siciunguis* Zhang et Qiao gen. nov.

模式种: 十绵蚜 *Siciunguis decima* Zhang et Qiao, sp. nov.

本新属与爪绵蚜属 *Aphidounguis* Takahashi, 1963 和绵蚜属 *Eriosoma* Leach, 1818 有较近的亲缘关系, 不同在于: 有翅孤雌蚜腹管位于腹部背片 VI, 隆起, 周围有毛环绕 (前者: 位于背片 VI, 不隆起, 无毛环绕; 后者: 位于背片 V, 隆起, 有毛环绕); 触角稍长, 至少为体长 0.35, 具有线形次生感觉圈; 后者: 稍长, 至少为体长 0.40, 具有环形次生感觉圈)。

十绵蚜 *Siciunguis decima* Zhang et Qiao, sp. nov. (图 1~17)

本新种与九绵蚜 *S. novena* Zhang et Hu, sp. nov. 有较近的亲缘关系, 不同在于: 触角节 III 有 16 或 17 个次生感觉圈 (后者: 12 或 13 个); 触角末节鞭部为基部 0.31 (后者: 0.45); 触角节 I~VI 长度比例: 16, 16, 100, 37, 32, 21+7 (后者: 22, 22, 100, 39, 39, 18+8); 腹部背片 VII 有毛 2 根 (后者: 7 根); 尾片有毛 2 根 (后者: 4 或 5 根)。

正模: 无翅孤雌蚜, No. Y8029-1-1-4, Oct. 3, 1996, 河北 (石家庄 82 m), 寄主: 苹果 *Malus pumila* Mill., 高志伟采集; 副模: 14 只无翅孤雌蚜和有翅孤雌蚜, No. Y8029, 其它同正模; No. Y7983, Oct. 10, 1995, 河北 (正定 80 m), 李智慧和谷兆翌采集, 寄主同正模。

九绵蚜 *Siciunguis novena* Zhang et Hu, sp. nov. (图 18~24)

本新种与十绵蚜 *S. decima* Zhang et Qiao, sp. nov. 有较近的亲缘关系, 不同在于: 触角节 III 有 12 或 13 次生感觉圈 (后者: 16 或 17 个); 触角末节鞭部为基部 0.45 (后者: 0.31); 触角节 I~VI 长度比例: 22, 22, 100, 39, 39, 18+8 (后者: 16, 16, 100, 37, 21, 21+7); 腹部背片 VII 有毛 7 根 (后者: 2 根); 尾片有毛 4 或 5 根 (后者: 2 根)。

正模: 有翅孤雌蚜, No. Y7986-1-2-1, Oct. 11, 1995, 陕西 (乾县 670 m), 梨 *Pyrus bretschneideri* Rehd., 胡作栋采集; 副模: 5 有翅孤雌蚜, No. Y7986, 胡作栋、马淑燕、张富合和王建有采集, 其它同正模。

苹果根爪绵蚜 *Aphidounguis pomiradicola* Zhang et Hu, sp. nov. (图 25~31)

本新种与苹果爪绵蚜 *A. mali* Takahashi 有较近的亲缘关系, 不同在于: 腹管不显 (后者: 腹管位于腹部背片 VI); 尾片有毛 4 根 (后者: 2 根); 生殖板有毛 10~14 根 (后者: 19 根); 触角节 III~VI 长度比例:

100, 31, 25, 10+4（后者：100, 34, 32, 26+11）。

正模：有翅孤雌蚜，No. Y7985-1-2-3, Oct. 16, 1995, 陕西（乾县 670 m），寄生在苹果 *Malus pumila* Mill. 根部，胡作栋采集；副模：7 有翅孤雌蚜，No. Y7985, 胡作栋、马淑艳、张富合和王建有采集，其它同正模。

关键词 瘿绵蚜科，拟爪绵蚜新属，新种，中国